Out of NCERT

Population genetics

Study of gene frequency in a population is called population genetics

① **Gene pool**

"Sum total of gene in reproductive gametes"

frequency of M gene $P = \frac{M}{M+N} = \frac{120}{120+80} = \frac{120}{200} = 0.6$

frequency of N gene $= \frac{N}{M+N} \quad \frac{80}{120+80} = \frac{80}{200} = 0.4$

$M = 0.6 \quad N = 0.4$

$M + N = 0.6 + 0.4 = 1$

$p + q = 1$

MM = 50

MN = 20

NN = 30

Total (N) gene

Hardy Weinberg law

1908 (G.H Hardy (Germanphysicist))

This law ⇒ factors

p = frequency of Dominant Allele.

q = frequency of Recessive Allele.

$$p^2 + 2pq + q^2 = 1$$

A → p AA ⇒ p^2

a → q aa ⇒ q^2

Aa → Heterozygous → 2pq

AA

aa

1) In this equation frequency of dominant Allele ⇒ A → p

2) frequency of Homozygous Dominant AA → p^2

3) In this equ. frequency of recessive Allele a → q

4) frequ of Homozygous recessi aa → q^2

5) frequency of Heterozygous dor Aa = 2pq

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1) In this equation frequency of dominant Allele ⇒ A → p

2) frequency of Homozygous Dominant → p^2

In a Random population frequency of recessive genotype 0.09. What is the frequency of Heterozygous genotype?

$q^2 = 0.09$

$q = 0.3$

$p = 1 - q$

$p = 1 - 0.3 = 0.7$

$2pq \Rightarrow 2 \times 0.7 \times 0.3$

Aa = 0.42 = 42%

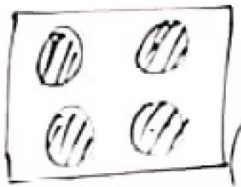
PROBABILITY (प्रायिकता)

Case = I ⇒ different ⇒ probality = ? No. of .

m ⇒ Specific case

n ⇒ Total No. of case

Coin (1) → H = 1/2, T = 1/2



P = ? 1/4

Family 4 ♀ 5वें पुत्र होने की संभावना? 1/2

4 बच्चे = चारो पुत्र (Son)

$1/2 \times 1/2 \times 1/2 \times 1/2 = 1/16$.

3 Son 1 ♀

PROBABILITY (प्रायिकता)

Case = I ⇒ different ⇒ probality = ? No. of .

[Coin ①] → H = 1/2

P = ? 1/1

m ⇒ Specific case

n ⇒ Total No. of case or ∪

In family ⇒ 4 बच्चे 2 पुत्र (son) combind probability (C.P)

3 son ? 1 पुत्री होने की संभावना?

$C.P = \frac{n}{x_1 | x_2} p^{x_1} q^{x_2}$

$\Rightarrow \frac{4}{3|1} (1/2)^3 (1/2)^1$

$\Rightarrow \frac{4 \times 3 \times 2 \times 1}{}$

$\therefore C.P = \frac{n}{x_1 | x_2} (p)^{x_1} (q)^{x_2}$

x_1 = No. of I st case

x_2 ⇒ No. of II nd case

n ⇒ No. of units Total बच्चे

PROBABILITY (प्रायिकता)

Case = I ⇒ different ⇒ probality = ? No. of .

m ⇒ Specific case

n ⇒ Total No. of case

1 Coin ⇒ H = 1/2

P = ?

1/1

In family ⇒ 4 बच्चे

2 पुत्र (son)

2 son ? 1 पुत्री होने की संभावना

Family has 9 girls pr. of 10th son?

1) 50% 2) 25% 3) 75% 4) 100%

9 girls 10th Son?

Q If a couple has four girls the probability of fifth child b mal

4 girls 5. वें ⇒ 1/2

Q If a fam. 10 बच्चे

7 girls 3 boys

$$\% = \frac{10}{7)\ 3)}\left(\frac{1}{2}\right)^7\left(\frac{1}{2}\right)^3$$

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